

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/586,871 Confirmation No. 1552  
Applicant : Armin MERZ et al.  
Filed : July 21, 2006  
TC/A.U. : 3747  
Examiner : K. Coleman

Docket No. : R.307341  
Customer No. : 02119

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Date: April 6, 2009

**AMENDMENT UNDER 37 C.F.R. § 1.116**

Sir:

In response to the Final Office action of January 6, 2009, please amend the above-identified application as follows:

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this paper.

**Remarks** begin on page 5 of this paper.

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

Claims 1-9. (Canceled)

10. (Currently amended) ~~The high-pressure pump according to claim 9~~ A high-pressure pump for a fuel injection system of an internal combustion engine,  
the pump comprising

a housing with at least one pump element including a pump piston driven into a stroke motion by a drive shaft;

the pump piston being guided so that it can slide in a cylinder bore of a housing part and delimiting a pumping chamber therein;

a support element supporting the pump piston against the drive shaft;

a prestressed return spring acting on both the pump piston and the support element in the direction toward the drive shaft,

a receptacle contained in the same housing part that contains the cylinder bore, the support element being guided so that it can slide in the receptacle in the direction of the longitudinal axis of the pump piston, but cannot rotate around the longitudinal axis,

wherein an end of the cylinder bore oriented toward the drive shaft terminates at a plane containing a wall of the receptacle.

Claim 11. **(Canceled)**

12. **(Previously presented)** The high-pressure pump according to claim 10, wherein the receptacle is embodied in the form of at least one slot provided in the housing part.

Claim 13. **(Canceled)**

14. **(Previously presented)** The high-pressure pump according to claim 10, wherein the support element is embodied as at least approximately rectangular in cross section.

Claim 15. **(Canceled)**

Claim 16. **(Canceled)**

17. **(Previously presented)** The high-pressure pump according to claim 10, wherein the housing part comprises an extension that is at least approximately cylindrical, is oriented toward the drive shaft, and contains the cylinder bore and the receptacle.

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Claims 18-20. **(Canceled)**

21. **(Previously presented)** The high-pressure pump according to claim 17, wherein the return spring is a helical compression spring encompassing the extension of the housing part.

Claims 22-27. **(Canceled)**

28. **(Currently amended)** The high-pressure pump according to claim ~~[[9]]~~ 10, wherein the return spring is supported at least indirectly against the support element; and wherein the pump piston is coupled to the support element in the direction of its longitudinal axis.

### REMARKS

Claims 10, 12, 14, 17, 21 and 28 are presently in the application. Claim 1-9, 11, 13, 15, 16, 18-20 and 22-27 have been canceled.

Claim 10 has been rewritten in independent form, including all of the limitations of claim 9. Accordingly, no new issues are presented by this amendment.

Claims 9-28 have been rejected under 35 U.S.C. 102(b) as anticipated by Kovacs et al (US 4,008,009). Reconsideration of the rejection is requested.

Independent claim 10 requires “a support element supporting the pump piston against the drive shaft,” a pump housing with “a housing part” containing a cylinder bore and a receptacle for guiding the support element so that the support element can slide in the receptacle in the direction of the longitudinal axis of the pump piston. Claim 10 further requires that the receptacle and the cylinder bore are contained in the same housing part and that an end of the cylinder bore oriented toward the drive shaft terminates at a plane containing a wall of the receptacle.

As seen in applicants' Fig. 2, the claimed receptacle 46 has an end wall (the top wall of the receptacle 46, as seen in Fig. 2) which is coplanar with the end of the cylinder bore oriented towards the drive shaft.

In contrast, Kovacs et al teaches a high-pressure pump for a fuel injection system of an internal combustion engine, the pump comprising: a housing 11, 13 with at least one pump element including a pump piston 35 driven into a stroke motion by a drive shaft 50; the pump piston 35 being guided so that it can slide in a cylinder bore 30 of barrel 29 physically disposed

in housing part 11 and delimiting a pumping chamber therein; a support element 46 supporting the pump piston against the drive shaft; a prestressed return spring 41 acting on both the pump piston and the support element in the direction toward the drive shaft, a receptacle 25 contained in the same housing part 11 that contains the cylinder bore 30, the support element 46 being guided so that it can slide in the receptacle 25 in the direction of the longitudinal axis of the pump piston.

Regarding the language “an end of the cylinder bore oriented toward the drive shaft terminates at a plane containing a wall of the receptacle” in claim 10, the examiner reads the “support element supporting the pump piston against the drive shaft” on the ears 51 formed on the piston 35 and the “receptacle” in which the support element is guided on the interior of control sleeve 38 (Final Rejection, page, 3, line 2) and says that Kovacs et al teaches “an end of the cylinder bore (29) oriented toward the drive shaft (50) terminates at a plane containing a wall of the receptacle (i.e. the interior of 29)” (Final Rejection, page, 3, lines 4-6)

However, the ears 51 formed on the piston 35 of Kovacs do not support the pump piston against the drive shaft as required by the language of claim 10. Therefore, it is improper for the examiner to read the “receptacle” on the interior of control sleeve 38.

At col 3, line 48 through col. 4, line 2, Kovacs teaches that:

In order to control the quantity of fuel being pumped, the piston 35 is adapted to be rotated relative to the barrel 29 to control the point of communication between the groove 36 of the piston and the groove 34 of the barrel. This is done by providing a pair of outwardly extending ears 51 on the piston 35 and such ears are retained within grooves 52 in the upper portion of the control sleeve 38. The control sleeve grooves are deep enough so that the ears 51 do not engage the bottom of the grooves during the entire

stroke of the piston. A control rod 53 extends through the body 11 and through the lower reservoir 24 therein. A toothed rack 54 is adjustably mounted on the control rod in any desired manner, as by a set screw 55. The teeth of the rack 54 mesh with the segmental gear 39 of the control sleeve so that back-and-forth movement of the control rod 53 causes partial rotation of the sleeve 38. Since the ears 51 of the piston are retained within the grooves 52 of the control sleeve, rotation of the control sleeve causes the piston 35 to rotate relative to the barrel 29 and vary the point where the groove 36 crosses and communicates with the groove 34.

It is clear from this teaching in Kovacs that the ears 51 simply key the piston 35 to the rotational position of the control sleeve 38, that is, as the control sleeve 38 is rotated by the control rod 53, the piston 35 rotates along with the control sleeve 38.

Attention is directed to the meaning of the word “support.” The ordinary meaning of the word is “to keep from falling or sinking; bear the weight of; hold up; sustain” ( The World Book Dictionary, 1987, p. 2106). The ears 51 do not **support** the pump piston **against** the drive shaft. This is a fact, because one could eliminate both the ears and the control sleeve in Kovacs’ structure and the pump piston would still be supported against the drive shaft.

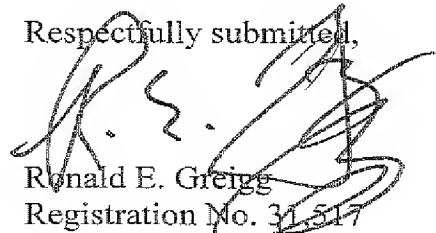
In Kovacs, the element which **supports** the piston 35 **against** the drive shaft is the tappet 46 and the receptacle which guides the support element is the bore 25. Thus, Kovacs does not teach that an end of the cylinder bore 30 oriented toward the drive shaft terminates at a plane containing a wall of the receptacle 25 as required by the language of claim 10. Hence, Kovacs does not anticipate claim 10 or any of the claims dependent from claim 10.

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The Commissioner is hereby authorized to charge any necessary fees in connection with this communication to Deposit Account Number 07-2100.

Entry of the amendment and allowance of the claims are courteously solicited.

Respectfully submitted,



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